

**Texas Air Control Board**  
AUSTIN TEXAS  
**INTEROFFICE**

FROM Effects Evaluation Section TO Interested parties  
SUBJECT List of Effects Screening Levels

The following list includes the effects screening levels (ESL's) currently used by the TACB Effects Evaluation (EES) staff in its evaluation of the impacts of various air contaminants. These screening levels are based on data concerning health effects (most applicable occupational exposure limit; TLV, NIOSH, or OSHA), odor nuisance potential, vegetation effects, or corrosion effects. Note that these screening levels are subject to change without notice. To be sure of the current screening level, please check with the EES staff.

Any air contaminant not on this list must be reviewed on a case-by-case basis by the EES.

We are planning to publish quarterly updates of this list. If you would like to have a copy, please contact Tadge Ross (x424) in the Research Division.

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ENFORCEMENT PROGRAM

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EFFECTS SCREENING LEVELS FOR VARIOUS CHEMICALS  
 (November 19, 1987)

005410

SUBSTANCE	30-MINUTE	EFFECTS SCREENING LEVEL (ug/m3)	ANNUAL
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA			
acetaldehyde	90		*
acetic acid	250	25	
acetic anhydride	200	20	
acetone	5900	590	
acetone cyanohydrin	40	4	
acetonitrile	340	34	
acetylene	26600	2660	
acetylene tetrabromide	140	14	
acetylsalicylic acid (PM)	50	5	
acrolein	2.5	0.25	
acrylamide	0.3	0.03	
acrylic acid	60	6	
acrylonitrile	45	4.5	
adiponitrile	180	18	
Aldrin	1.5	0.15	
allyl alcohol	50	5	
allyl chloride	30	3	
allyl glycidyl ether	220	22	
allyl propyl disulfide	120	12	
alumina (PM)	100	10	
aluminum: metal and oxide	100	10	
pyro powders, welding fumes	50	5	
alkyls and soluble salts	20	2	
aminopyridine	20	2	
Amitrole	2	0.2	
ammonia	180	18	
ammonium chloride fume	100	10	
ammonium perfluorooctanate	1	0.1	
ammonium sulfamate (Ammate)	100	10	
amyl acetate, n-	290	*	
amyl acetate, sec-	11	*	
amyl mercaptan	0.1	*	
aniline	100	10	
anisidine, o-, p- isomers	5	0.5	
antimony	5	0.5	
antimony trioxide	5	0.5	

\* short-term limit more restrictive  
 annual limit does not apply

November 19, 1987

## SUBSTANCE

EFFECTS SCREENING  
LEVEL

~~30-minute~~

### **annual**

ANTU (alpha naphthathiourea)	3	0.3
argon		
arsenic and compounds	simple asphyxiant	
arsine	0.10	0.010
asbestos (fibers/cc)	2	0.2
NOTE: 1 f/cc=0.06 ng/m <sup>3</sup>	.001	.0001
asphalt, particulate fraction	50	5
Atrazine	50	5
Azinphos-methyl	2	0.2

barium, soluble compounds	5	0.5
barium sulfate	100	10
Benomyl	100	10
benzene	30	3
benzoyl peroxide	50	5
benzyl chloride	50	5
beryllium and compounds	see TACB Reg III	
biphenyl	5	*
bismuth telluride	100	10
selenium doped	50	5
borates, tetrasodium salts	anhydrous, pentahydrate	
decahydrate	10	1
boron oxide	50	5
boron tribromide	100	10
boron trifluoride	100	10
Bromacil	see TACB Reg III	
bromine	100	10
t	7	0.7
bromine pentafluoride	see TACB Reg III	
bromoform	50	5
butadiene, 1,3-	currently under review by EES	
butane	19000	1900
butoxyethanol	480	t

- \* short-term limit more restrictive - annual limit does not apply

November 19, 1987

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005412

## SUBSTANCE

## EFFECTS SCREENING LEVEL

30-minute annual

butyl acetate, n-	1850	*
butyl acetate, sec-	9500	950
butyl acrylate	190	*
butyl alcohol, n-	1500	150
butyl alcohol, sec-	3050	305
butyl alcohol, tert-	3000	300
butylamine, n-	150	15
butylated hydroxytoluene (BHT)	100	10
butyl chromate, tert-	1	0.1
butyl glycidyl ether	300	30
butyl isocyanate	0.2	0.02
butyl lactate	250	25
butyl mercaptan, n-	3.6	*
butyl phenol, o-sec-	300	30
butyl toluene, p-tert-	600	60
butyronitrile	220	22

**cadmium and copper**

cadmium and compounds		
calcium arsenate	0.1	0.01
calcium carbonate (marble)	0.02	0.002
calcium cyanamide	100	10
calcium hydroxide	5	0.5
calcium oxide	50	5
calcium silicate	20	2
calcium sulfate (gypsum)	100	10
camphor	100	10
caprolactam, dust and vapor	100	10
Capgafol	10	1
Captan	1	0.1
Carbaryl	50	5
Carbofuran	50	5
carbon black	1	0.1
with PAH's adsorbed	35	3.5
carbon dioxide	1	0.1
carbon disulfide	90000	9000
carbon monoxide	30	3
carbon tetrabromide	must meet NAAQS	
carbon tetrachloride	14	1.4
carbonyl fluoride	120	12
catechol	50	5
	200	5

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005413

SUBSTANCE	EFFECTS SCREENING LEVEL	
	30-minute	annual
cellulose (PM)	100	10
cesium hydroxide	20	2
Chlordane	5	0.5
chlorinated diphenyl oxide	5	0.5
chlorine	15	1.5
chlorine dioxide	3	0.3
chlorine trifluoride	see TACB Reg III	
chloroacetaldehyde	30	3
chloroacetone	40	4
chloroacetophenone	3	0.3
chloroacetylchloride	2	0.2
chlorobenzene	3140	*
chlorobenzylidene malono-nitrile	4	0.4
chlorobromomethane	10500	1050
chlorodifluoromethane	35000	3500
chloroform	100	10
chloromethyl ether, bis-	0.05	0.005
chloronitropropane	100	10
chloropentafluoroethane	63200	6320
chloropicrin	7	0.7
chloroprene, beta	35	3.5
chlorostyrene	2850	285
chlorotoluene	1660	*
Chlorpyrifos (Dursban)	2	0.2
chromic acid	0.25	0.025
chromium (+6 valence)	0.25	0.025
all other valence states	1.00	0.1
cromyl chloride	1.5	0.15
Clopidol	100	10
coal dust, respirable	100	3
coal tar pitch volatiles	1	0.1
cobalt and compounds	0.5	0.05
cobalt carbonyl	1	0.1
cobalt hydrocarbonyl	1	0.1
coke oven emissions	1.5	0.15
copper, fume dust	2	0.2
cotton dust	10	1
cresol	currently under EES review	
creosote	1.2	*
	1	0.1

\* short-term limit more restrictive  
annual limit does not apply

November 19, 1987

005414

## SUBSTANCE

## EFFECTS SCREENING LEVEL

30-minute annual

- \* short-term limit more restrictive-annual limit does not apply

November 19, 1987

005415

## SUBSTANCE

EFFECTS SCREENING  
LEVEL

30-minute      annual

dichloroethylene, 1,2-	79	7.9
dichloroethyl ether	300	30
dichlorofluoromethane (Freon 21)	400	40
dichloronitroethane	100	10
dichloropropane, 1,2-	see propylene dichloride	
dichloropropene	50	5
dichloropropionic acid	60	6
dichlorotetrafluoroethane (Freon 114)	70000	7000
Dichlorvos	10	1
Dicrotaphos	2.5	0.25
dicyclopentadiene	31	---
dicyclopentadienyl iron	100	10
Dieldrin	1.5	0.15
diethanolamine	150	15
diethylamine	300	30
diethylaminoethanol	55	---
diethylene triamine	40	4
diethyl ketone	7050	705
diethyl phthalate	50	5
difluorodibromomethane (Freon 12B2)	8600	860
diglycidyl ether	5	0.5
diisobutyl ketone	640	---
diisopropylamine	200	20
dimethyl acetamide	350	35
dimethylamine	180	18
dimethylaniline	0.8	0.08
dimethylformamide	300	30
dimethyl hydrazine, 1,1-	1.5	0.15
dimethyl phthalate	50	5
dimethyl sulfate	5	0.5
dinitolmide	50	5
dinitrobenzene	10	1
dinitro-o-cresol	2	0.2
dinitrotoluene	15	1.5
dioctyl phthalate	50	5
dioxane, 1,4-	36	3.6
Dioxathion	2	0.2
diphenylamine	100	10

\* short-term limit more restrictive  
annual limit does not apply

November 19, 1987

005416

## SUBSTANCE

EFFECTS SCREENING  
LEVEL  
30-minute      annual

dipropylene glycol	currently under EES review	
monomethyl ether		
dipropyl ketone		
Diquat	2350	235
Disulfiram	5	0.5
Disulfoton	20	2
Diuron	1	0.1
divinyl benzene	100	10
	500	50
EEE		
emery		
Endosulfan	100	10
Endrin	1	0.1
enflurane	1	0.1
epichlorohydrin	5750	575
EPN (O-ethyl, O-p-nitrophenyl phenylphosphonothioate)	100	10
ethane	5	0.5
ethanolamine	simple asphyxiant	
Ethion	80	8
ethoxyethanol	4	0.4
ethoxyethanol acetate	190	19
ethyl acetate	270	27
ethyl acrylate	14000	1400
ethyl alcohol	5	*
ethylamine	19000	1900
ethyl amyl ketone	180	18
ethyl benzene	1300	130
ethyl bromide	4350	435
ethyl butyl ketone	8900	890
ethyl chloride	2300	230
ethylene	11000	*
ethylene chlorohydrin	1170	*
ethylene diamine	30	3
ethylene dibromide	250	25
ethylene dichloride	3.8	0.38
ethylene glycol	40	4
ethylene glycol dinitrate	1250	125
ethyleneimine	1	0.1
ethylene oxide	10	1
	18	1.8

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005417

## SUBSTANCE

## EFFECTS SCREENING LEVEL

30-minute annual

ethyl ether	12000	1200
ethyl formate	3000	300
ethyldine norbornene	70	*
ethyl mercaptan	2.0	*
ethyl morpholine	230	23
ethyl silicate	850	85

Fenamiphos	1	0.1
Fensulfothion	1	0.1
Fenthion	2	0.2
Ferbam	100	10
ferrovanadium dust	10	1
fibrous glass dust, respirable	30	3
total	50	5
fluorides (as F)	see TACB Reg III	
fluorine	2	0.2
Fonophos	1	0.1
formaldehyde	15	1.5
formamide	150	15
formic acid	90	9
furfural	80	8
furfuryl alcohol	400	40

gasoline	9000	900
	(also need to consider benzene content)	
germanium tetrahydride	6	0.6
glutaraldehyde	7	0.7
glycerin mist	100	10
glycolonitrile	50	5
graphite, natural	25	2.5
synthetic	100	10
gypsum	100	10

oo

hafnium  
halothane 5 0.5  
4000 400

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005410

## SUBSTANCE

EFFECTS SCREENING  
LEVEL

30-minute      annual

helium		simple asphyxiant
Heptachlor	5	0.5
heptane	3500	350
hexachlorobutadiene	2.4	0.24
hexachlorocyclopentadiene	1	0.1
hexachloroethane	100	10
hexachloronaphthalene	2	0.2
hexafluoroacetone	7	0.7
hexamethylene diisocyanate	0.35	0.035
hexane, n-	1800	180
other isomers	18000	1800
hexyl acetate, sec-	12	*
hexylene glycol	1250	125
hydrazine	0.4	0.04
hydrogen		
hydrogenated terphenyls		simple asphyxiant
hydrogen bromide	50	5
hydrogen chloride	100	10
hydrogen cyanide	70	0.1
hydrogen fluoride	50	5
hydrogen peroxide		see TACB Reg III
hydrogen selenide	15	1.5
hydroquinone	2	0.2
hydroxypropyl acrylate	20	2
	30	3

indene	70	*
indium	1	0.1
iodine	10	1
iodoform	80	*
iron oxide (fume)	50	5
iron pentacarbonyl	8	0.8
iron salts, soluble	10	1
isoamyl acetate	130	*
isoamyl alcohol	150	*
isobutyl acetate	3000	*
isobutyl alcohol	1500	150
isobutyronitrile	220	22
isoctyl alcohol	2700	270
isophorone	250	25

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

## SUBSTANCE

## EFFECTS SCREENING LEVEL

30-minute annual

isophorone diisocyanate	0.45	0.045
isopropoxyethanol	1050	105
isopropyl acetate	9500	950
isopropyl alcohol	9800	980
isopropylamine	120	12
isopropylaniline	100	10
isopropyl ether	70	*
isopropyl glycidyl ether	2400	240

kaolin	100	10
Kepone	0.01	0.001
kerosene	550	*
ketene	9	0.9

lactol spirits	3500	
lead		350
lead arsenate (as As)	must meet NAAQS	
lead chromate (as Cr)	0.02	0.002
limestone	0.25	0.025
Lindane	100	10
	5	0.5
liquified petroleum gas	18000	1800
lithium hydride	0.25	0.025

magnesite	100	10
magnesium oxide (fume)	100	10
Malathion	100	10
maleic anhydride	10	10
malonitrile	80	1
manganese fume dust	10	8
manganese cyclopentadienyl tricarbonyl	50	1
manganese tetroxide	5	1
marble (calcium carbonate)	1	0.1
mercury, alkyls	100	0.01
other forms	0.1	0.05
	0.5	

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005420

SUBSTANCE	EFFECTS SCREENING LEVEL	
	30-minute	annual
mesityl oxide	400	40
methacrylic acid	700	70
methane		simple asphyxiant
Methomyl	25	2.5
Methoxychlor	100	10
methoxyethanol	160	16
methoxyethanol acetate	240	24
methoxyphenol	50	5
methyl acetate	6100	610
methyl acetylene	16500	1650
methyl acrylate	17	*
methyl acrylonitrile	30	3
methylal (dimethoxymethane)	31000	3100
methyl alconol	2600	260
methylamine	120	12
methyl amyl ketone	1630	*
methyl aniline	20	2
methyl bromide	200	20
methyl n-butyl ketone	40	4
methyl chloride	1050	105
methyl chloroform	19000	1900
methyl cyanoacrylate	80	8
methyl cyclohexane	16000	1600
methyl cyclohexanol	2350	235
methyl cyclohexanone	2300	230
methyl cyclopentadienyl manganese tricarbonyl	2	0.2
Methyl demeton		
methylene bisphenyl diisocyanate (MDI)	5	0.5
methylene chloride	0.5	0.05
methylene bis(2-chloro-aniline), 4,4'	0.55	0.055
methylene bis(4-cyclohexylisocyanate)	260	26
methylene dianiline, 4,4'	2.2	0.22
methyl ethyl ketone	0.55	0.055
methyl ethyl ketone peroxide	0.8	0.08
methyl formate	5900	590
methyl hydrazine	15	1.5
	2500	250
	0.8	0.08

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

905421

## SUBSTANCE

## EFFECTS SCREENING

## LEVEL

### 30-minute

### **annual**

methyl iodide	100	10
methyl isoamyl ketone	56	*
methyl isobutyl carbinol	290	*
methyl isobutyl ketone (hexone)	2050	205
methyl isocyanate	0.5	0.05
methyl isopropyl ketone	5300	530
methyl mercaptan	3	*
methyl methacrylate	340	*
Methyl parathion	2	*
methyl propyl ketone (2-pentanone)	5300	0.2 530
methyl silicate	60	
methyl styrene, alpha-	1400	6
Metribuzin		*
Mevinphos	50	5
mica, respirable	1	0.1
mineral spirits	30	3
mineral wool fibers	3500	350
molybdenum, soluble insoluble	100 50	10 5
Monocrotophos	100	10
morpholine	2.5	0.25
	36	*

Naled		
naphtha	30	3
naphthalene	3500	350
naphthalene diisocyanate	440	*
neon	0.4	0.04
nickel		simple asphyxiant
nickel carbonyl	0.15	0.015
nickel sulfide roasting	0.07	0.007
nicotine	10	1
nitrapyrin	5	0.5
nitric acid	100	10
nitric oxide	50	5
nitroaniline	300	30
nitrobenzene	30	3
nitrochlorobenzene	50	5
	6	0.6

\* short-term limit more restrictive-  
annual limit does not apply

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005422

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005423

## SUBSTANCE

EFFECTS SCREENING  
LEVEL

30-minute      annual

phenyl ether	8	*
phenyl glycidyl ether	50	5
phenyl hydrazine	6	0.6
phenyl mercaptan	4	*
phenyl phosphine	2.5	0.25
Phorate	0.5	0.05
phosgene	4	0.4
phosphine	4	0.4
phosphoric acid	10	1
phosphorus (yellow)	1	0.1
phosphorus oxychloride	6	0.6
phosphorus pentachloride	10	1
phosphorus pentasulfide	10	1
phosphorus trichloride	15	1.5
phthalic anhydride	60	6
phthalodinitrile	50	5
Picloram	100	10
picric acid	0.5	*
Pindone	1	0.1
piperazine dihydrochloride	50	5
Plaster of Paris	100	10
platinum, metal	10	1
soluble salts	0.02	0.002
Portland cement	100	10
potassium hydroxide	20	2
propane	18000	1800
propargyl alcohol	20	2
propiolactone, beta-	15	1.5
propionic acid	300	30
propionitrile	140	14
Propoxur	5	0.5
propyl acetate	2800	*
propyl alcohol	5000	500
propylene		simple asphyxiant
propylene dichloride	1150	*
propylene glycol dinitrate	3	0.3
propylene glycol monomethyl ether	3600	360
propylene imine	50	5

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005424

SUBSTANCE	EFFECTS SCREENING LEVEL	
	30-minute	annual
propylene oxide	50	5
propyl mercaptan	0.8	*
propyl nitrate	1050	105
Pyrethrum	50	5
pyridine	40	*
quinone	4	0.4
resorcinol	450	45
rhodium		
soluble compounds	0.01	0.001
metal and insoluble cmpds	1	0.1
Ronnel	100	10
rosin core pyrolysis prods	1	0.1
Rotenone	50	5
rouge (Fe2O3)	100	10
rubber solvent (naphtha)	3500	350
selenium and compounds		
Sesone	2	0.2
silica gel, respirable	100	.10
total	50	5
silicon	100	10
silicon carbide	100	10
silicon tetrahydride (silane)	100	10
silver and compounds	70	7
soapstone, respirable	0.1	0.01
total	30	3
sodium azide	60	6
sodium bisulfite	3	0.3
sodium fluoroacetate	50	5
sodium hydroxide	0.5	0.05
sodium metabisulfite	20	2
starch	50	5
stearates	100	10
stibine	100	10
	5	0.5

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

\* short-term limit more restrictive-  
annual limit does not apply

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005426

SUBSTANCE	EFFECTS SCREENING		
	LEVEL 30-minute	annual	
thallium	1	0.1	
thiobis(t-butyl-m-cresol)	100	10	
thioglycolic acid	40	4	
thionyl chloride	50	5	
Thiram	10	1	
tin compounds:			
organic compounds	1	0.1	
metal, oxide, and inorganic compounds (except SnH4)	20	2	
titanium dioxide	100	10	
tolidine, o-	0.2	0.02	
toluene	3750	375	
toluene-2,4-diisocyanate	0.35	0.035	
toluidine, all isomers	90	9	
Toxaphene	5	0.5	
tributyl phosphate	25	2.5	
trichloroacetic acid	70	7	
trichlorobenzene, 1,2,4-	400	40	
trichloroethane, 1,1,1-	see methyl chloroform		
trichloroethane, 1,1,2-	450	45	
trichloroethylene	1350	135	
trichlorofluoromethane (Freon 11)	28000	*	
trichloronaphthalene	50	5	
trichloropropane, 1,2,3-	600	60	
trichloro-1,2,2-trifluoro-ethane, 1,1,2- (Freon 113)	76000	7600	
triethylamine	400	40	
trifluorobromomethane (Freon 13B1)	61000	6100	
trimellitic anhydride	0.4	0.04	
trimethyl benzene	1250	125	
trimethyl phosphite	0.5	*	
trinitrotoluene (TNT)	5	0.5	
triorthocresyl phosphate	1	0.1	
triphenylamine	50	5	
triphenyl phosphate	30	3	
tungsten, insoluble cmpds	50	5	
soluble compounds	10	1	
turpentine	3500	350	

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

005427

SUBSTANCE	EFFECTS SCREENING LEVEL	30-minute	annual
<hr/>			
uranium			
soluble compounds	0.5	0.05	
insoluble compounds	2	0.2	
<hr/>			
valeraldehyde	98	*	
vanadium pentoxide	0.5	0.05	
vegetable oil mists	100	10	
vinyl acetate	300	30	
vinyl bromide	200	20	
vinyl chloride	100	10	
vinyl cyclohexene dioxide	600	60	
vinylidene chloride	200	20	
vinyl toluene	2400	240	
<hr/>			
warfarin	1	0.1	
welding fumes	50	5	
wood dust, hardwoods	10	1	
softwoods	50	5	
<hr/>			
xylene	4350	435	
xylene-a,a'-diamine, m-	1	0.1	
xylidine, 2,4-	100	10	
<hr/>			
ytterium	10	1	
<hr/>			
zinc chloride fume	10	1	
zinc chromate	0.25	0.025	
zinc oxide fume	50	5	
dust	100	10	
zinc stearate	100	10	
zirconium compounds	50	5	

\* short-term limit more restrictive-  
annual limit does not apply

November 19, 1987

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